

Neural Networks in Support of Manned Space

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Abstract

Many lobbyists in Washington have argued that artificial intelligence (AI) is an alternative to manned space activity. In actuality, this is the opposite of the truth, especially as regards artificial neural networks (ANNs), that form of AI which has the greatest hope of mimicking human abilities in learning, ability to interface with sensors and actuators, flexibility and balanced judgement.

This talk will begin by briefly reviewing ANNs and their relation to expert systems (the more traditional form of AI), and the limitations of both technologies. It will give a few highlights of recent work on ANNs, including an NSF-sponsored workshop on ANNs for control applications. It will then discuss current thinking on ANNs for use in certain key areas — the National Aerospace Plane, teleoperation, the control of large structures, fault diagnostics, and docking — which may be crucial to the long-term future of man in space.